

Appl. No. : 09/859,563  
Filed : May 16, 2001

### AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A node for use in a wireless communication network, the node comprising:

a base mount configured to be removably receive-attached to a position determination device and a tiltmeter for determining position of the node;

at least one azimuth plate;

an optical receiver/transmitter pair mounted on one of the at least one azimuth plate; and

a post, wherein the at least one azimuth plate is rotatably mounted on the post and the post is configured to align the at least one azimuth plate with the base mount.

2. (Original) The node of Claim 1, wherein the post includes a groove.

3. (Currently Amended) ~~the~~ The node of Claim 2, wherein the groove is a V-groove, wherein the V-groove is configured to receive a set screw that aligns the azimuth plate to the post.

4. (Currently Amended) ~~The node of Claim 1, further comprising a plurality of azimuth plates rotatably mounted on the post.~~ A node for use in a wireless communication network, the node comprising:

a base mount configured to removably receive a position determination device and a tiltmeter;

a plurality of azimuth plates;

an optical receiver/transmitter pair mounted on one of the azimuth plates; and

a post, wherein the plurality of azimuth plates are rotatably mounted on the post and the post is configured to align the azimuth plates with the base mount.

5. (Original) The node of Claim 1, wherein the post further comprises a conduit for transmitting signals to the transmitter/receiver pair.

6. (Original) The node of Claim 1, wherein the base mount precisely aligns the position determination device and tiltmeter to the post.

7. (Currently Amended) ~~The node of Claim 1,~~ A node for use in a wireless communication network, the node comprising:

Appl. No. : 09/859,563  
Filed : May 16, 2001

a base mount configured to removably receive a position determination device and a tiltmeter wherein the base mount comprises a first mounting box with a keyhole configured to receive a portion of the position determination device;

at least one azimuth plate;

an optical receiver/transmitter pair mounted on one of the at least one azimuth plate; and

a post, wherein the at least one azimuth plate is rotatably mounted on the post and the post is configured to align the at least one azimuth plate with the base mount.

8. (Original) The node of Claim 7, further comprising a second mounting box, wherein the first mounting box has two slots proximate the keyhole to receive guide pins, and the second mounting box has one slot proximate the keyhole to receive a single guide pin.

9. (Original) The node of Claim 1, further including a radome and a lid surrounding the optical receiver/transmitter pair.

10. (Currently Amended) ~~The node of Claim 9, further comprising~~ A node for use in a wireless communication network, the node comprising:

a base mount configured to removably receive a position determination device and a tiltmeter;

at least one azimuth plate;

an optical receiver/transmitter pair mounted on one of the at least one azimuth plate;

a post, wherein the at least one azimuth plate is rotatably mounted on the post and the post is configured to align the at least one azimuth plate with the base mount;

a radome and a lid surrounding the optical/transmitter pair; and

a tensioning screw and a spring configured to place the post in tension and the radome in compression.

11. (Currently Amended) ~~The node of Claim 9,~~ A node for use in a wireless communication network, the node comprising:

a base mount configured to removably receive a position determination device and a tiltmeter, wherein the base mount includes an opening covered by a breathable patch;

at least one azimuth plate;

Appl. No. : 09/859,563  
Filed : May 16, 2001

an optical receiver/transmitter pair mounted on one of the at least one azimuth plate;

a post, wherein the at least one azimuth plate is rotatably mounted on the post and the post is configured to align the at least one azimuth plate with the base mount; and  
a radome and a lid surrounding the optical/transmitter pair..

12. (Currently Amended) ~~The node of Claim 9 further containing~~ A node for use in a wireless communication network, the node comprising:

a base mount configured to removably receive a position determination device and a tiltmeter;

at least one azimuth plate;

an optical receiver/transmitter pair mounted on one of the at least one azimuth plate;

a post, wherein the at least one azimuth plate is rotatably mounted on the post and the post is configured to align the at least one azimuth plate with the base mount;

a radome and a lid surrounding the optical/transmitter pair; and

a heater element to prevent condensation on the radome.

13. (Currently Amended) The node of Claim 1, wherein the at least one azimuth plate further comprises an azimuth stepper motor to adjust the azimuth pointing direction of the receiver/transmitter pair.

14. (Original) The node of Claim 13, further including a constant tension spring to reduce backlash in the stepper motor.

15. (Original) The node of Claim 13 where the azimuth stepper motor is configured to provide at least 360 degrees of rotation to the transmitter/receiver pair.

16. (Currently Amended) The node of Claim 1, wherein the at least one azimuth plate has an elevation stepper motor configured to adjust the elevation pointing direction of the receiver/transmitter pair.

17. (Original) The node of Claim 16, further including a constant tension spring to reduce backlash in the elevation stepper motor.

18. (Original) The node of Claim 16 where the azimuth stepper motor is configured to provide at least 20 degrees of elevation movement to the optical transmitter/receiver pair.

Appl. No. : 09/859,563  
Filed : May 16, 2001

19. (Original) The node of Claim 1, further comprising a non-volatile memory device to store data that accounts for offsets in the actual pointing direction of the optical receiver/transmitter pair relative to a design pointing direction.

20. (Currently Amended) A system for positioning and aligning a receiver/transmitter pair in a communication node, with said node part of a wireless communication network, the system comprising:

a position determination device configured to determine the position and bearing of the system for positioning-system;

a tiltmeter, configured to determine the pitch and roll orientation of the system for positioning system within the network;

a base mount configured to be removably receive-attached to the position determination device and the tiltmeter;

at least one azimuth plate;

an optical receiver/transmitter pair mounted on one of the at least one azimuth plate; and

a post, coupled to the base mount and wherein the at least one azimuth plate is rotatably mounted on the post ~~ant-and~~ and the post is configured to align the at least one azimuth plate with the base mount.

21. (Currently Amended) ~~The system of Claim 20,~~ A system for positioning and aligning a receiver/transmitter pair in a communication node, with said node part of a wireless communication network, the system comprising:

a position determination device configured to determine the position and bearing of the system for positioning wherein the position determination device comprises two GPS receivers;

a tiltmeter, configured to determine the pitch and roll orientation of the system for positioning within the network;

a base mount configured to removably receive the position determination device and the tiltmeter;

at least one azimuth plate;

an optical receiver/transmitter pair mounted on one of the at least one azimuth plate; and

Appl. No. : 09/859,563  
Filed : May 16, 2001

a post, coupled to the base mount and wherein the at least one azimuth plate is rotatably mounted on the post and the post is configured to align the at least one azimuth plate with the base mount.

22. (Currently Amended) ~~The system of Claim 20,~~ A system for positioning and aligning a receiver/transmitter pair in a communication node, with said node part of a wireless communication network, the system comprising:

a position determination device configured to determine the position and bearing of the system for positioning wherein the position determination device is a differential GPS (DGPS) receiver;

a tiltmeter, configured to determine the pitch and roll orientation of the system for positioning within the network;

a base mount configured to removably receive the position determination device and the tiltmeter;

at least one azimuth plate;

an optical receiver/transmitter pair mounted on one of the at least one azimuth plate; and

a post, coupled to the base mount and wherein the at least one azimuth plate is rotatably mounted on the post and the post is configured to align the at least one azimuth plate with the base mount.

23. (Original) The system of Claim 22, wherein there are two DGPS receivers.

24. (Currently Amended) ~~The system of Claim 20, wherein the tiltmeter is further configured~~ A system for positioning and aligning a receiver/transmitter pair in a communication node, with said node part of a wireless communication network, the system comprising:

a position determination device configured to determine the position and bearing of the system for positioning;

a tiltmeter, configured to determine the pitch and roll orientation of the system for positioning within the network and to determine roll and pitch angles of the node.

25. (Currently Amended) ~~The system of Claim 20, wherein~~ A system for positioning and aligning a receiver/transmitter pair in a communication node, with said node part of a wireless communication network, the system comprising:

Appl. No. : 09/859,563  
Filed : May 16, 2001

a position determination device configured to determine the position and bearing of the system for positioning;

a tiltmeter, configured to determine the pitch and roll orientation of the system for positioning within the network;

a base mount configured such that the position determination device removably attaches to the base mount;

at least one azimuth plate;

an optical receiver/transmitter pair mounted on one of the at least one azimuth plate; and

a post, coupled to the base mount and wherein the at least one azimuth plate is rotatably mounted on the post and the post is configured to align the at least one azimuth plate with the base mount.

26. (Currently Amended) ~~The system of Claim 20, wherein~~ A system for positioning and aligning a receiver/transmitter pair in a communication node, with said node part of a wireless communication network, the system comprising:

a position determination device configured to determine the position and bearing of the system for positioning;

a tiltmeter, configured to determine the pitch and roll orientation of the system for positioning within the network;

a base mount configured such that the tiltmeter removably attaches to the base mount;

at least one azimuth plate;

an optical receiver/transmitter pair mounted on one of the at least one azimuth plate; and

a post, coupled to the base mount and wherein the at least one azimuth plate is rotatably mounted on the post and the post is configured to align the at least one azimuth plate with the base mount.

27. (Currently Amended) ~~The system of Claim 20, wherein the base mount comprises~~ A system for positioning and aligning a receiver/transmitter pair in a communication node, with said node part of a wireless communication network, the system comprising:

Appl. No. : 09/859,563  
Filed : May 16, 2001

a position determination device configured to determine the position and bearing of the system for positioning;

a tiltmeter, configured to determine the pitch and roll orientation of the system for positioning within the network;

a base mount comprising a first mounting plate and a second mounting plates,  
wherein the tiltmeter attaches to the first mounting plate;

at least one azimuth plate;

an optical receiver/transmitter pair mounted on one of the at least one azimuth plate; and

a post, coupled to the base mount and wherein the at least one azimuth plate is rotatably mounted on the post and the post is configured to align the at least one azimuth plate with the base mount.

28. (Currently Amended) A method of pointing a directional transmitter/receiver pair of a communication node in a wireless communications network, wherein the node comprises a base mount configured to removably receive at least one position determining device and a tiltmeter, an azimuth plate, a directional receiver/transmitter pair mounted on the azimuth plate, and a post, wherein the azimuth plate is rotatably mounted on the post and the post is configured to align the azimuth plate with the base mount, said method comprising:

determining tolerance ~~offsets~~ offset data for the node;

storing the offset data in a memory;

installing the node on a fixture;

determining the position and the bearing of the node using a position determination device installed on the node;

determining the pitch and roll of the node; and

pointing the optical transmitter receiver pair to a transceiver of another node using the offset data stored in the memory, the position, bearing, pitch and roll data.

29. (Original) The method of Claim 28, wherein the tolerance offset data accounts for machining and assembly variations in the base mount, azimuth plate and post.

30. (Currently Amended) The method of Claim 28, further including the step of removing the ~~GPS receivers~~ position determination device after the positional and bearing information is obtained.

**Appl. No.** : **09/859,563**  
**Filed** : **May 16, 2001**

31. (Currently Amended) The method of Claim 28, wherein the act of determining the pitch and roll of the node is accomplished using a tiltmeter, and wherein the method further including comprises the step of removing the tiltmeter after the pitch and roll information is obtained.

32. (New) A node for use in a wireless communication network, the node comprising:

a base mount;

a mounting arm connected to the base mount and configured to be removably attached to a position determining device;

at least one azimuth plate;

an optical receiver/transmitter pair mounted on one of the at least one azimuth plate; and

a post, wherein the at least one azimuth plate is rotatably mounted on the post and the post is configured to align the at least one azimuth plate with the base mount.

33. (New) A node as defined in Claim 32, wherein the mounting arm is removably connected to the base mount.

34. (New) A node as defined in Claim 32, wherein the mounting arm is configured such that a position determining device attached thereto is located a predetermined distance away from the node.

35. (New) A node as defined in Claim 32, wherein the mounting arm is configured to be removably attached to a tiltmeter.

36. (New) A node for use in a wireless communication network, the node comprising:

a base mount configured to removably receive a position determination device;

a plurality of azimuth plates;

a plurality of optical receiver pairs, each of said receiver pairs positioned on a different one of the plurality of azimuth plates; and

a post, wherein each of the plurality of azimuth plates is rotatably mounted on the post and the post is configured to align each of the plurality of azimuth plates with the base mount.



**Appl. No.** : **09/859,563**  
**Filed** : **May 16, 2001**

37. (New) A node as defined in Claim 35, wherein the base mount is configured to removably receive a position determination device.

38. (New) A node as defined in Claim 35, wherein the base mount is configured to removably receive a tiltmeter.

39. (New) A node as defined in Claim 35, further comprising a mounting arm connected to the base mount and configured to removably receive a position determining device.

40. (New) A node as defined in Claim 39, wherein the mounting arm is removably connected to the base mount.

41. (New) A node as defined in Claim 39, wherein the mounting arm is configured such that a position determining device attached thereto is located a predetermined distance away from the node.

42. (New) A node as defined in Claim 39, wherein the mounting arm is configured to be removably attached to a tiltmeter.